

monocrystalline/mono crystal and thus clearly patentable over the art known to Applicants and that cited by the Examiner. Favorable reconsideration of this application is, consequently, earnestly solicited in view of the following remarks.

With respect to the Information Disclosure Statement, the Examiner is thanked for taking the necessary corrective action as indicated by his entries to Form 1449; however, it is not clear from his remarks at Para. 2 if he has or has not considered the cited Moorman Patents. If so, would he so indicate all citations that were inadequately supplied so that they can be supplied.

With respect to the specification all corrections noted by the Examiner have been made by so amending the specification. Of particular relevance to a proper understanding of this invention is the corrections within the text to the references to the Figures.

As to the objection of claim 9, which would be relevant to newly proposed Claim 18, AFPD is a typographical error and has been replaced with the term "APD" which a well known acronym for an avalanche photodiode which is now more clearly referred to on page 12, lines 12+ of the specification. No new matter has been entered since this modification existed in at least originally filed claim 9 of the subject invention. Thus, removal of the objection is respectfully requested.

Claim 1 has been rejected under 35 U.S.C. 102 as being clearly anticipated by Ozawa. With respect to the Ozawa paper, one can not find any connection regarding the invention as set forth in amended claim 1. Ozawa teaches the use of a phosphor screen for x-ray detection which is made of fine polycrystalline phosphor powders, not a monocrystal. Among all the phosphors that are cited in the patent, the subject claimed monocrystal material is not one of them. Applicants see nothing included in Ozawa's patent which could be a proper basis for this rejection. In applicants view the only relevant art must be limited to monocrystalline scintillation detectors and any teaching of how to grow the claimed mixed crystals in a monocrystalline structure, which is not describe, taught, nor suggested by Ozawa. Thus, removal of the Ozawa reference is respectfully requested.

Claims 1 – 9 are rejected under 35 U.S.C. 103(a) as unpatentable over Melcher in view of Watanabe et al. Before considering the combined essence of these two references, a short review of the science of crystallography and its relevance to the claimed invention is warranted.

Similar to the Ozawa reference, the Melcher patent describes fine powder phosphors and not monocrystal scintillation detectors and thereby lacks relevance to the subject invention as did Ozawa and will be seen from the following discussion.

No where do any of the references cited in the office action show it would be obvious to make mixed composition monocrystals as is claimed in the subject invention as is understood by the applicants of the subject application. The reason is that the phase rule will force the crystal to change in composition as it is grown from the melt. In the end, the crystal can become badly cracked and useless because the composition is not uniform. To be able to grow monocrystal of intermediate composition without a change in composition with more 80% melt converting to crystal would require very special conditions which does not occur in general system. It is this intrinsic composition variation problem, which causes the chemist who understand the phase diagram to stay away from the system. Since from his knowledge, the system can not possibly work. Therefore, to be able to produce a monocrystal of intermediate composition between lutetium orthosilicate and yttrium orthosilicate is absolutely not obvious.

Even though one might look at Watanabe et al for a suggestion "that a cerium doped lutetium yttrium orthosilicate phosphor is more promising in terms of its scintillation properties" when in sintered powder form, there is no suggestion of how the monocrystalline form would

scintillate. It appears very easy to make intermediate composition fine powder ceramics by solid state reaction without a melting process. This is exactly how Watanabe et al made his phosphor by sintering at 1350 C while the melting point of these compositions are around 2150 C.

Furthermore, Melcher does not overcome the deficiencies to these references cited above. Melcher in Cols. 7 and 8 notes some problems with growing cerium activated LSO crystals which had poor temperature properties and improved signal to noise ratios but has no relevance to the phosphor powders of Watanabe et al.

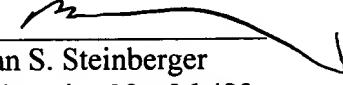
Finally, most important of all is that the chemical composition of the lutetium yttrium silicate is DIFFERENT from the claimed composition since Watanabe et al's composition has 50% more silica. There is no description, teaching nor suggestion for producing a monocrystal using Watanabe's composition. In reality, the claimed composition of this subject application is a different crystal system even though both happen to have the same name.

Applicant contends the references cannot be modified to incorporate the features of subject claims 1, 2, 4, 5, and 7-20 without utilizing Applicants' disclosure. The courts have consistently held that obviousness cannot be established by combining the teachings of the prior art to Applicant to produce the claimed invention, absent some teaching, suggestion, incentive or motivation supporting the combination. In re Bond, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990).

Finally, as discussed in the telephone conversation of January 15, 2002, Applicant has now included a supplemental prior art Form 1449 referring to U.S. Patent 6,323,489 to McClellan which issued on November 27, 2001, and which has a filing date of June 4, 1999. The subject invention was filed on February 17, 2000, and which claims priority to U.S. Provisional Application filed on February 18, 1999, which was almost four months before the effective date of the McClellan '489 patent. Thus, it is clear that the subject application has priority over the McClellan '489 patent and would be allowable for at least the same reasons given for the benefit of the McClellan '489 patent.

In view of the foregoing considerations, it is respectfully urged that claims 1, 2, 4, 5, and 7-20 be allowed. If the Examiner believes that an interview would be helpful or a further affidavit by the Applicants, the Examiner is requested to contact the attorney at the below listed number.

Respectfully Submitted;

  
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